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## MEMORANDUM

DATE 4 November 1998

TO: David Bennett, WAM, U.S. EPA, Region X

FROM: Michelle Turner, Chemist, WESTON, Seattle  
*RM* Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT: Validation of Chlorinated Pesticide Data  
Laboratory Batch: K9805449  
Site: Duwamish River

WORK ASSIGNMENT NO. 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC CONTROL NO.: 4000-019-038-AAAK

cc: Bruce Woods, RAP-WAM, U.S. EPA, Region X  
Dena Hughes, Site Manager, WESTON, Seattle  
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of two sediment samples, laboratory batch K9805449, collected from the Duwamish River has been completed. Samples were analyzed for chlorinated pesticides by Columbia Analytical Services of Kelso, Washington using EPA Method 8081. The samples were numbered:

98334012

98334023

### Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract. The review follows the format described in the *National Functional Guidelines for Organic Data Review* (EPA OSWER Directive 9240 1-05, February 1994).

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98-0623F 002  
DCN 4000-019-038-AAAK

4 November 1998  
Region X





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1 Timeliness

All samples met holding time criteria of 14 days for sample extraction and 40 additional days for extract analysis.

2. GC/ECD Instrument Performance

i) Retention Time Windows

Retention times of all pesticides were within windows calculated from the initial calibration

ii) DDT/Endrin Breakdown

The percent breakdown for 4,4'-DDT and Endrin was less than 20 percent for each compound and combined breakdown was less than 30 percent on both GC columns.

3. Initial Calibration

a) Individual Standard Mixtures

Retention time windows were calculated correctly.

Appropriate standards concentrations were used and peak heights of 50 to 100 percent of full scale were obtained.

Calibration factor percent relative standard deviation (%RSD) met QC criteria of 20 percent for pesticides and 30 percent for surrogates.

4 Calibration Verification

Instrument blanks and PEM samples were analyzed at the proper frequency

The difference between actual and calculated concentrations of individual pesticides was within QC criteria of  $\pm 25$  percent.

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## 5. Detection Limits

Instrument detection limits met project required quantitation limits with the following exceptions:

Sample	Compound	QL Goal (µg/kg)	Reported QL (µg/kg)
98334012	gamma-Chlordane	1	2
98334012	alpha-Chlordane	1	2
98334012	DDE	1	2
98334012	Endosulfan II	2	6
98334012	DDD	2	3
98334012	DDT	2	3
98334023	alpha-BHC	1	5
98334023	beta-BHC	1	5
98334023	gamma-BHC (Lindane)	1	5
98334023	Heptachlor	1	5
98334023	Aldrin	1	5
98334023	Heptachlor Epoxide	1	10
98334023	gamma-Chlordane	1	5
98334023	Endosulfan I	1	5
98334023	alpha-Chlordane	1	7
98334023	Dieldrin	2	10
98334023	DDE	1	6
98334023	Endrin	2	10
98334023	Endosulfan II	2	20
98334023	DDD	2	10
98334023	Endrin Aldehyde	2	10
98334023	Endosulfan Sulfate	2	10

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Sample	Compound	QL Goal (µg/kg)	Reported QL (µg/kg)
98334023	DDT	2	10
98334023	Endrin Ketone	2	10
98334023	Methoxychlor	1	5
98334023	Toxaphene	10	270

Where quantitation limit goals were exceeded, undetected analytes were qualified (UI) to indicate matrix interference.

6. Blanks

a) Laboratory Method Blanks

Laboratory method blank frequency criteria were met

No target analytes were reported in laboratory method blanks.

b) Field Blanks

No field blanks were associated with this laboratory batch.

7. System Monitoring Compounds (Surrogates)

Surrogate compound percent recovery met quality control criteria for all samples.

8. Matrix Spike and Matrix Spike Duplicate

Matrix spike (MS) or matrix spike duplicate (MSD) percent recovery for the following compounds were outside QC guidelines (P-project, L-laboratory).

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Sample	Compound	Percent Recovery	QC Limits
98334023MS	gamma-BHC (Lindane)	40	46-127 (P) 20-141 (L)
98334023MS	Dieldrin	not calc	31-134 (P) 20-183 (L)
98334023DMS	gamma-BHC (Lindane)	40	46-127 (P) 20-141 (L)
98334023DMS	Dieldrin	not calc.	31-134 (P) 20-183 (L)
98334023DMS	Endrin	40	42-139 (P) 20-164 (L)

Relative percent difference (RPD) values between the matrix spike and matrix spike duplicate met project QC goals. Recovery values in the matrix spike and matrix spike duplicate were not calculated for dieldrin due to matrix interferences. No action was taken based solely on MS/MSD data. As LCS results were acceptable, samples were not qualified based on matrix spike/matrix spike duplicate results

9 Laboratory Control Sample (LCS)

All LCS percent recoveries met QC guidelines (P-project, L-laboratory) except for the following compounds.

Sample	Compound	Percent Recovery	QC Limits
K980821-LCS	Aldrin	60	70-130 (P) 26-127 (L)
K980821-LCS	Dieldrin	60	70-130 (P) 18-161 (L)

Results for compounds listed above were qualified as estimated (J). Undetected analytes were also qualified as estimated (UJ).

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10. Field Duplicate Analysis

No field duplicate samples were associated with this sample delivery group.

11. Second Column Confirmation

The relative percent difference (RPD) in reported analyte concentration was greater than 35 percent for the primary and confirmation column for the following samples:

Sample Number	Compound	DB-5 Conc (µg/kg)	DB-608 Conc (µg/kg)	RPD
98334012	alpha-BHC	ND	2 05	NA
98334012	Heptachlor Epoxide	325	ND	NA
98334012	Endosulfan I	2 18	ND	NA
98334012	Endrin	1.32	3 72	95
98334012	Endosulfan sulfate	2.42	ND	NA
98334012	Endrin Ketone	2.72	0 77	112
98334012	Methoxychlor	10 41	ND	NA
98334023	Aldrin	ND	12 34	NA
98334023	Endosulfan I	11 18	ND	NA
98334023	DDT	ND	25 22	NA

Differences can arise from analytical interferences on one column. However, the relative percent differences are not deemed significant at the reported concentrations. The lower concentration was reported for each analyte.

12. Sample Analysis

A cursory review of raw data was performed. All laboratory deliverables were present and complete. The case narrative indicates that dieldrin recovery in 98334023 matrix spike and matrix spike duplicate was not calculated because of matrix interference. PCBs in the sample prevented accurate analyte quantitation. No other unusual problems were noted.

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### 13 Laboratory Contact

No laboratory contact was required

### Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

### Data Qualifiers

- U - The compound was analyzed for, but was not detected.
- UJ - The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met
- J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less than CRDL or lowest calibration standard.
- R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.
- N - Presumptive evidence of presence of material (tentative identification).
- I - Elevated reporting limit due to matrix interference.

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## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Report

Client: Roy F Weston, Inc  
 Project: Duwamish River/4000-027-001-2019-38  
 Sample Matrix: Sediment

Service Request: K9805449  
 Date Collected: 8/12/98  
 Date Received: 8/13/98

## Organochlorine Pesticides

Sample Name 98334012 Units ug/Kg (ppb)  
 Lab Code K9805449-005 Basis Dry  
 Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
beta-BHC	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
gamma-BHC (Lindane)	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Heptachlor	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Aldrin	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND 1 UJ	
Heptachlor Epoxide	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
gamma-Chlordane	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND 2 UI	B
Endosulfan I	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
alpha-Chlordane	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND 2 UI	B
Dieldrin	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND 2 UJ	
4,4'-DDE	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND 2 UI	B
Endrin	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Endosulfan II	EPA 3550A	8081A	6	1	8/17/98	8/22/98	ND 6 UI	B
4,4'-DDD	EPA 3550A	8081A	3	1	8/17/98	8/22/98	ND 3 UI	B
Endrin Aldehyde	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Endosulfan Sulfate	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
4,4'-DDT	EPA 3550A	8081A	3	1	8/17/98	8/22/98	ND 3 UI	B
Endrin Ketone	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Methoxychlor	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Toxaphene	EPA 3550A	8081A	10	1	8/17/98	8/22/98	ND	

B

The MRL is elevated because of matrix interferences

209/10/24/98

Approved By

*Jonda Neuneke*

Date

9-1-98

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## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Report

Client: Roy F Weston, Inc  
 Project: Duwamish River/4000-027-001-2019-38  
 Sample Matrix: Sediment

Service Request: K9805449  
 Date Collected: 8/12/98  
 Date Received: 8/13/98

## Organochlorine Pesticides

Sample Name 98334023 Units ug/Kg (ppb)  
 Lab Code K9805449-016 Basis Dry  
 Test Notes D

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3550A	8081A	5	5	8/17/98	8/22/98	ND 5UI	
beta-BHC	EPA 3550A	8081A	5	5	8/17/98	8/22/98	ND 5UI	
gamma-BHC (Lindane)	EPA 3550A	8081A	5	5	8/17/98	8/22/98	ND 5UI	
Heptachlor	EPA 3550A	8081A	5	5	8/17/98	8/22/98	ND 5UI	
Aldrin	EPA 3550A	8081A	5	5	8/17/98	8/22/98	ND 5UI	
Heptachlor Epoxide	EPA 3550A	8081A	10	5	8/17/98	8/22/98	ND 10UI	B
gamma-Chlordane	EPA 3550A	8081A	5	5	8/17/98	8/22/98	ND 5UI	
Endosulfan I	EPA 3550A	8081A	5	5	8/17/98	8/22/98	ND 5UI	
alpha-Chlordane	EPA 3550A	8081A	7	5	8/17/98	8/22/98	ND 7UI	B
Dieldrin	EPA 3550A	8081A	10	5	8/17/98	8/22/98	ND 10UI	JB
4,4'-DDE	EPA 3550A	8081A	6	5	8/17/98	8/22/98	ND 6UI	B
Endrin	EPA 3550A	8081A	10	5	8/17/98	8/22/98	ND 10UI	
Endosulfan II	EPA 3550A	8081A	20	5	8/17/98	8/22/98	ND 20UI	B
4,4'-DDD	EPA 3550A	8081A	10	5	8/17/98	8/22/98	ND 10UI	
Endrin Aldehyde	EPA 3550A	8081A	10	5	8/17/98	8/22/98	ND 10UI	
Endosulfan Sulfate	EPA 3550A	8081A	10	5	8/17/98	8/22/98	ND 10UI	
4,4'-DDT	EPA 3550A	8081A	10	5	8/17/98	8/22/98	ND 10UI	
Endrin Ketone	EPA 3550A	8081A	10	5	8/17/98	8/22/98	ND 10UI	
Methoxychlor	EPA 3550A	8081A	5	5	8/17/98	8/22/98	ND 5UI	
Toxaphene	EPA 3550A	8081A	270	5	8/17/98	8/22/98	ND 270UI	B

B

The MRL is elevated because of matrix interferences

D

The MRL is elevated because of matrix interferences and because the sample required diluting

NGT 10/24/98

Approved By

Linda Meuneker

Date

9-1-98

1S22/020597p